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# U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 621 *Rev.*

8/31

## HOW TO ATTRACT BIRDS

IN NORTHEASTERN  
UNITED STATES



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U. S. Department of Agriculture  
Washington, D. C.

**B**IRDS appeal strongly to the interests and affections of mankind. Not only do they charm by their neat forms, harmonious colors, sprightly actions, and usually pleasing notes, but they have an even more important claim upon our esteem because of their great economic value.

Birds feed upon practically all insect pests. They are voracious, able to move freely from place to place, and exert a steady influence in keeping down the swelling tide of insect life.

For economic as well as for esthetic reasons, therefore, an effort should be made to attract and protect birds and to increase their numbers. Where proper measures of this kind have been taken an increase of several fold in the bird population has resulted, with decreased losses from depredations of injurious insects.

This bulletin is one of a series intended to describe the best methods of attracting birds in various parts of the United States, especially by providing a food supply and other accessories about the homestead. The area to which it is adapted is shown by the map on page 1.

# HOW TO ATTRACT BIRDS IN NORTH-EASTERN UNITED STATES

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THE means of increasing the number of birds about the home are few and simple. They comprise adequate protection and the provision of suitable nesting places, food, and water. The Bureau of Biological Survey is preparing a series of publications, of which this bulletin relating to northeastern United States (fig. 1) is one,<sup>1</sup> to recommend practicable methods of attracting birds about homes in the various parts of the United States. Especial attention will be given to the value of fruit-bearing shrubs and trees, as less information relating to these as a means of attracting birds is available than concerning more widely known but not more important measures like protection, winter feeding, and the supplying of nesting boxes and water. Furthermore, the last-named measures need not vary so much with the locality as does choice of fruit-bearing shrubs and trees.

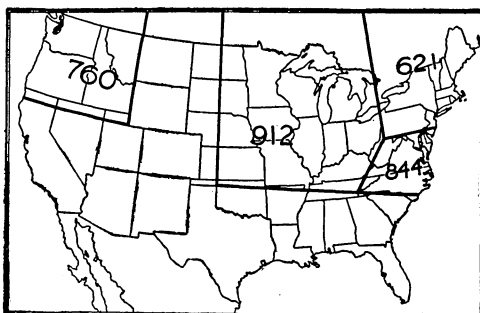


FIGURE 1.—Map of the United States, the area containing the number of this bulletin, 621, showing the territory to which this publication applies. Similar bulletins have been prepared for other sections, as indicated by the numbers

## PROTECTION

Protection is the prime requisite for increasing the number of birds in any area, and the results of protection are in direct proportion to its thoroughness. Besides being insured against every form of persecution by human kind, birds must be defended from various

<sup>1</sup> Other bulletins in the series now available are Farmers' Bulletin 760, relating to the Northwestern States; 844, to the Middle Atlantic States; 912, to the East Central States; and (for general distribution) 1456, on Homes for Birds, and 1644, on Local Bird Refuges.

natural foes. The most effectual single step is to surround the proposed bird sanctuary with a vermin-proof fence. (Fig. 2.) Such a fence should prevent entrance either by digging or by climbing, but will serve its greatest use if it can not be climbed, and is therefore cat proof.<sup>2</sup> For this purpose the erect part of the fence aboveground

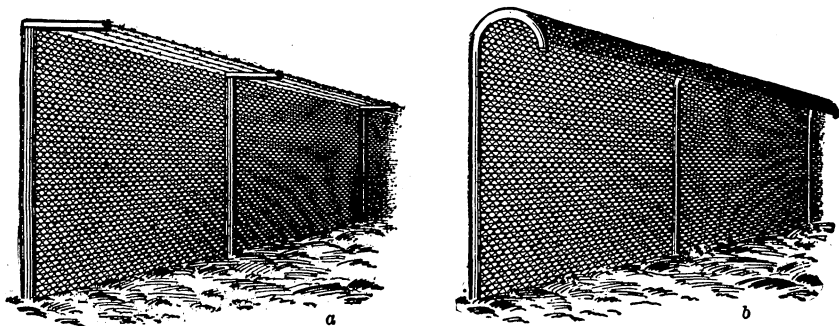


FIGURE 2.—Cat-proof fence : a, With barbed wire ; b, with loose overhanging netting

should be 6 feet high, and the weave should not be more than  $1\frac{1}{2}$ -inch mesh. The overhang should be 2 feet wide, and if strung with wires these should be not more than  $1\frac{1}{2}$  inches apart. If it is impracticable to build an impenetrable fence, the next best device is to put guards (fig. 3) of sheet metal on all nesting trees and on poles supporting bird houses.

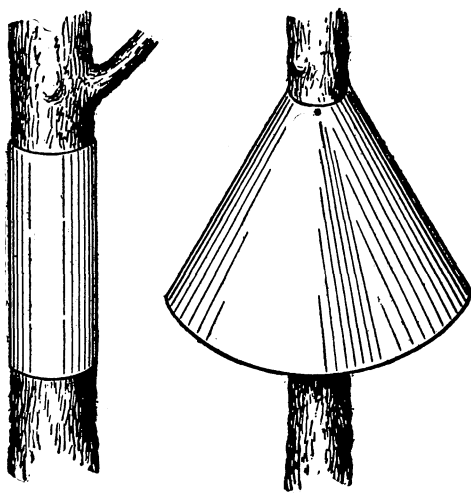


FIGURE 3.—Tree guards

This should be done in any case where squirrels or snakes are likely to intrude, as it is usually impossible to fence out these animals. Tree guards should be 6 feet or more above ground. Attacks by hawks, owls, crows, jays, or other enemies are best controlled by eliminating the destructive individuals. Those who wish to combat English sparrows will find full directions for so doing in Leaflet 61, English Sparrow Control.

#### BREEDING PLACES

Although a considerable number of our native birds build their nests on the ground, the majority place them in trees or shrubs, either in holes or on the limbs or in the crotches. Shrubbery and trees for nesting sites, therefore, are essential for making a place attractive to birds, and a double purpose is served if the kinds planted are chosen from the list of fruit-bearing species given further on. Shrubs should

<sup>2</sup> Fuller information on vermin-proof fencing may be obtained from Farmers' Bulletin 1613, Propagation of Upland Game Birds.

be allowed to form thickets and should be pruned back severely when young so as to produce numerous crotches.

Modern tree surgery and constant removal of old trees have resulted in a great diminution in the number of tree cavities, the natural homes of most of our hole-nesting birds. Fortunately, most of these birds will utilize artificial nest cavities or bird houses. All truly interested in the welfare of birds will see that plenty of bird boxes are available; it is better to do this than to lament the passing of our interesting hole-dwelling species. The sizes useful for various birds, plans for making, and illustrations of numerous bird boxes are given in Farmers' Bulletin 1456, *Homes for Birds*. Styles of bird houses may be almost endlessly varied. These structures may be improvised by anyone, but they may be purchased also from numerous dealers. A bird house needs only partial shade, and houses on poles usually are taken. Martins prefer a house standing apart from trees. These are our only birds occupying colony houses; homes for other birds should have one room only. Entrances to boxes should be sheltered by projecting roofs, and should face away from the prevailing wind and rainstorms.

All bird houses should be constructed so that the interior may easily be examined and cleaned. This is not only important to permit last year's rubbish to be thrown out, but is necessary in much of the area for which the present bulletin is written to facilitate inspection for gipsy-moth egg masses and cocoons.

It is best to clean out bird houses after every brood; this not only invites reoccupation of the box but rids it of parasites. To destroy thoroughly the latter, application of a strong disinfectant is required. Birds as a rule not only do not want bird neighbors too near, but they are impatient of human meddling, and therefore should be granted as much privacy as possible during the actual incubating and brooding. Nests built in shrubbery are especially likely to come to a bad end if the birds are frequently disturbed.

If ground-nesting birds, as bobolinks, meadowlarks, and bobwhites, are to be protected, grass in the nesting fields must not be cut during the breeding season.

#### WATER SUPPLY

Nothing has a more potent attraction for birds during hot weather than drinking and bathing places. The birds' water supply should be a pool not more than a few inches deep, the bottom sloping gradu-

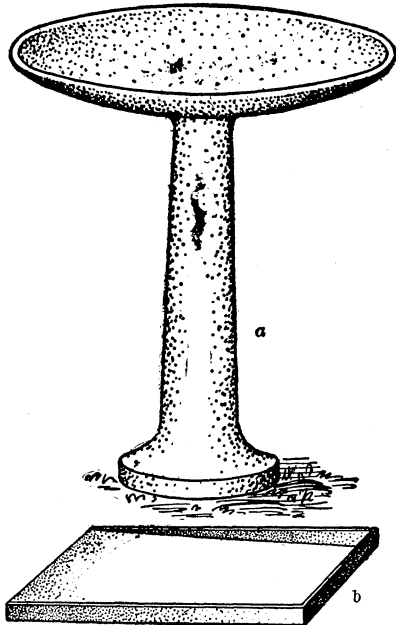


FIGURE 4.—Bird baths: *a*, Pottery; *b*, metal or concrete

ally upward toward the edge. Both bottom and edge should be rough, so as to afford a safe footing. A giant pottery saucer (fig. 4, *a*) is an excellent device, or the pool may be made of concrete or even metal, if the surface be roughened or covered with gravel (fig. 4, *b*). The bird bath may be elevated, or it may be on the ground if in an open space where skulking enemies can not approach too near.

A water supply is appreciated in winter as well as in summer. If running water can not be provided, that supplied should be warmed to delay freezing, and renewed at least daily.

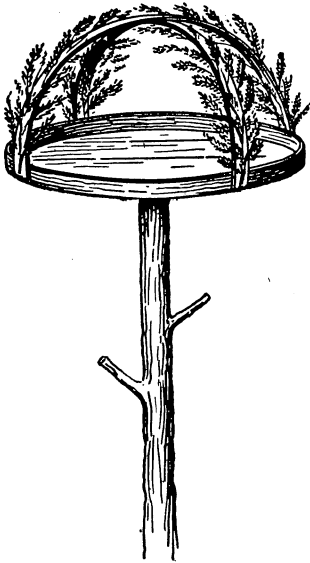


FIGURE 5.—Food tray

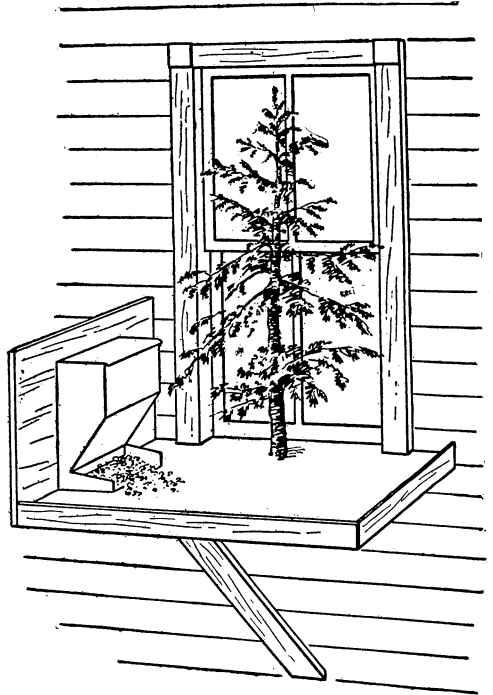


FIGURE 6.—Food shelf

#### FOOD SUPPLY

Food supply is the vital factor in bird life and the most important single offering that can be made in efforts to attract birds. It is worth noting that an ample supply of food prior to and during the nesting season tends to increase the number of eggs laid and also the number of broods in a season. Insects and their larvae are the principal food of many of our birds, and these usually are sufficiently numerous. On game-bird farms, dense growths of vegetation are especially developed for the sake of the insects they will produce to feed the young birds. Aside from insects, bird food may be supplied in two ways—by planting trees, shrubs, and herbs which produce seeds or fruits relished by birds, and by exposing food in artificial devices. The most familiar phase of the latter method is winter feeding.

## ARTIFICIAL FOOD

During the season when the natural food supply is at its lowest ebb birds respond most readily to our hospitality. Winter feeding has become very popular, and the result has been to bring about better understanding between birds and human kind.

The winter foods commonly used include suet or other fat, pork rinds, bones with shreds of meat, cooked meats, meal worms, cut-up apples, birdseed, buckwheat, crackers, crumbs, coconut meat, cracked corn, broken dog biscuits or other bread, hempseed, millet, nut meats of all kinds (especially peanuts), whole or rolled oats, peppers, pop corn, pumpkin or squash seeds, raw or boiled rice, sunflower seeds, and wheat.

The methods of making these supplies available to birds are as varied as the dietary itself. A device very commonly used is the food tray or shelf. (Figs. 5 and 6.) This may be put on a tree or pole, by a window or at some other point about a building, or strung upon a wire or other support on which it may be run back and forth. The last device is useful in accustoming birds to feed nearer and nearer a comfortable observation point. A fault with food shelves is that wind and rain may sweep them clean and snow may cover the food. These defects may be obviated in part by adding a raised ledge about the margin or by placing the shelf in the shelter of a wall or shielding it with evergreen branches on one or more sides.

Feeding devices not affected by the weather are preferable. An excellent one is a coconut with a hole cut in one end. (Fig. 7.) The cavity is filled with chopped suet and nuts or other food mixture, and the nut is suspended by a wire from a limb. The size of the hole regulates the character of the guests; if small, large birds



FIGURE 7.—Coconut larder

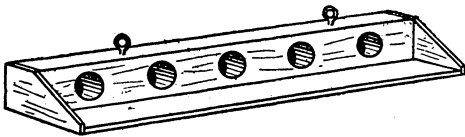


FIGURE 8.—Feeding stick

can not gobble the supply. The coconut meat as well as the stuffing is eaten.

Cans with small openings may be substituted for coconuts. Food baskets of any desired size made of wire netting or a metal grating may be hung up or fastened to the trunk of a tree. Food mixtures in melted fat may be poured into holes made in a branch or stick (fig. 8) or in cracks of bark or over evergreen branches. All of these devices minimize or obviate the disturbing effects of stormy weather.

More elaborate apparatus for the same purpose comprises various forms of food hoppers and food houses. The food hoppers (figs. 6



and 9) in common use for domestic fowls are adapted to the feeding of birds, and some special forms are now manufactured for wild birds.

The food house is a permanent structure, with solid roof, and glass on one or more sides to permit observations. (Fig. 10.) The food trays it contains are entirely sheltered from the weather. In one style this result is obtained by mounting the house on a pivot and furnishing it with vanes (fig. 11) which if large enough keep the open side always from the wind.

Game birds and sparrows may be provided with feeding places<sup>3</sup> by erecting low hutches or making wigwamlike shocks of corn or grain sheaves under which food may be scattered. The opening should be to the south.

Those who desire to have birds about their homes should not feel that their power to attract them is gone when winter is over. Winter feeding easily passes into summer feeding, and experience proves that some birds gladly avail themselves throughout the year of this easy mode of getting a living.

#### NATURAL FOOD

Ways of feeding birds tidbits which we have gleaned have been considered. They may be fed by another method, by cultivating their natural food plants and allowing them to reap the harvest in their own way.<sup>4</sup>

Less has been done in this respect for the true seed-eating birds than for those fond of pulpy fruits. The reason is obvious, however. Our seed-eating birds largely patronize weeds, which we do not wish to cultivate, while the fruit eaters depend upon many plants which are held in such esteem for their ornamental value that they are generally cultivated.

#### FEEDING SEED-EATING BIRDS

Something can be done, however, to attract the seed eaters about our homes. A number of commonly cultivated annual plants, belonging to the same groups as those upon which the birds feed extensively in nature, produce good crops of seeds. These plants, being dependent upon cultivation, can be used without fear that they will become pests. The following are suggested for the purpose: Princess-feather (*Amaranthus cruentus*), love lies bleeding (*A. caudatus*), asters, calandrinias, blessed thistle (*Carduus benedictus*), centaureas, California poppies (*Eschscholtzia*), sunflowers, tarweed (*Madia elegans*), forget-me-nots, *Polygonum orientale* and *P. sashalinense*, Portulaca, Silene, and sugarcane (sorghum varieties).

The various millets are relished by nearly all seed-eating birds. Common millet (*Panicum miliaceum*), Japanese millet or barnyard grass (*Echinochloa crus-galli*), and German millet or Hungarian grass (*Setaria italica*) may be obtained from most seedsmen, and

<sup>3</sup> See also Biological Survey mimeographed Leaflet B1-1099, Winter Feeding of Upland Game Birds; copies will be furnished by the Bureau of Biological Survey on request.

<sup>4</sup> The Bureau of Biological Survey will be pleased to receive information supplementary to that given in this bulletin regarding any plants shown by actual trial to be valuable as bird food, and their fruiting seasons.

should be planted in abundance by those wishing to attract granivorous birds. The height and stiffness of stalk of varieties of sorghum should make these abundant seeders valuable in winter. Japanese millet holds its seeds well and, if planted thickly where it can grow up through a horizontal lattice work, makes a valuable cover and feeding place for winter birds. Canary grass (*Phalaris canariensis*) and various species of *Pennisetum* also are good for seed-eating birds.

Alders and birches bear in their numerous cones a supply of seeds which are eagerly sought for by redpolls, siskins, and goldfinches during the winter. Still another group of birds may be catered to by planting ashes and boxelders. The winged fruits of these trees are opened and the seeds eaten by pine and evening grosbeaks, the visits of these birds being largely regulated by the supply of this kind of food. Larches, pines, and other conifers are attractive to crossbills as well as to some of the species just mentioned.

#### FEEDING FRUIT-EATING BIRDS

Feeding fruit-eating birds is best accomplished by planting selected species of fruit-bearing shrubs and trees. Through late spring and summer there is usually an abundance of insect food in addition to fruit enough for all the birds. So far as fruit alone is concerned, fall is the season of overflowing abundance; in winter the supply gradually decreases, and late winter and early spring are the seasons of actual scarcity. This is the critical time of year for many birds, and a plentiful supply of wild fruit will tide them over. Fortunately, everywhere in the United States there are some fruits that persist until there is no longer any need for them. If enough are planted, no birds able to live on this class of food should starve. The best of these long persisting fruits are juniper, bayberry, thorn apples and related fruits, holly, and snowberry.

How cultivation of ornamental shrubs and trees can greatly increase the winter supply of fruit in the area covered by this bulletin is convincingly shown by the subjoined lists. That (Table 1) made in the vicinity of Boston, Mass., but chiefly in the Arnold Arboretum, reveals that 135 species were holding their fruit to the middle of March, while another count (Table 2) made in a smaller plantation in New York City about a week earlier shows 56 species, 35 of them additional to the Boston list.

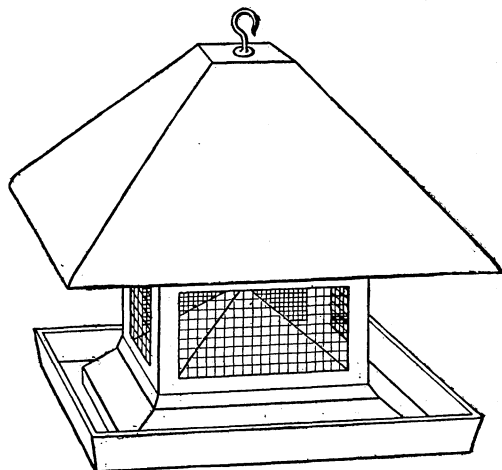


FIGURE 9.—Food hopper (roof detachable)

TABLE 1.—*Persistent fruits in the vicinity of Boston, Mass., chiefly in the Arnold Arboretum, Jamaica Plains, March 13-21, 1914*

Common name	Scientific name	Common name	Scientific name
Common juniper.....	<i>Juniperus communis</i> .	Rose.....	<i>Rosa arvensis</i> .
Red cedar.....	<i>Juniperus virginiana</i> .	Do.....	<i>Rosa blanda</i> .
Bristly greenbrier.....	<i>Smilax hispida</i> .	Do.....	<i>Rosa canina dumetorum</i> .
Hackberry.....	<i>Celtis bungeana</i> .	Do.....	<i>Rosa coriifolia</i> .
Do.....	<i>Celtis mississippiensis</i> .	Do.....	<i>Rosa gaiana</i> .
Do.....	<i>Celtis occidentalis</i> .	Do.....	<i>Rosa hibernica</i> .
Do.....	<i>Celtis serrata</i> .	Do.....	<i>Rosa kamskatica</i> .
Common pokeberry.....	<i>Phytolacca americana</i> .	Do.....	<i>Rosa multiflora</i> .
Amur barberry.....	<i>Berberis amurense</i> .	Do.....	<i>Rosa palustris</i> .
Allegheny barberry.....	<i>Berberis canadensis</i> .	Do.....	<i>Rosa hibernica</i> .
Kansu barberry.....	<i>Berberis diaphana</i> .	Do.....	<i>Rosa rugosa</i> .
Guimpel's barberry.....	<i>Berberis guimpeli</i> .	Do.....	<i>Rosa setigera</i> .
Siebold's barberry.....	<i>Berberis sieboldii</i> .	Do.....	<i>Rosa spinosissima</i> .
Chinese barberry.....	<i>Berberis sinensis</i> .	Sakhalin corktree.....	<i>Phellodendron sachalinense</i> .
Japanese barberry.....	<i>Berberis thunbergii</i> .	Smooth sumac.....	<i>Rhus glabra</i> .
European barberry.....	<i>Berberis vulgaris</i> .	Staghorn sumac.....	<i>Rhus hirta</i> .
Common moonseed.....	<i>Menispermum canadense</i> .	Poison ivy.....	<i>Toxicodendron radicans</i> .
Asiatic moonseed.....	<i>Menispermum dauricum</i> .	Inkberry.....	<i>Ilex glabra</i> .
Winter currant.....	<i>Ribes fasciculatum</i> .	Smooth winterberry.....	<i>Ilex laevigata</i> .
Firethorn.....	<i>Cotoneaster horizontalis</i> .	American holly.....	<i>Ilex opaca</i> .
Do.....	<i>Cotoneaster lucida</i> .	Common winterberry.....	<i>Ilex verticillata</i> .
Do.....	<i>Cotoneaster tomentosa</i> .	Mountain-holly.....	<i>Nemopanthus mucronatus</i> .
Do.....	<i>Cotoneaster vulgaris</i> .	Burningbush.....	<i>Euonymus bungeanus</i> .
Hawthorn.....	<i>Crataegus armata</i> .	Wintercreeper.....	<i>Euonymus radicans vegetus</i> .
Canby's hawthorn.....	<i>Crataegus canbyi</i> .	Oriental bittersweet.....	<i>Celastrus orbiculatus</i> .
Carriere's hawthorn.....	<i>Crataegus carrierei</i> .	American bittersweet.....	<i>Celastrus scandens</i> .
Chapman's hawthorn.....	<i>Crataegus chapmani</i> .	Japanese pachysandra.....	<i>Pachysandra terminalis</i> .
Coral hawthorn.....	<i>Crataegus colorado</i> .	Common buckthorn.....	<i>Rhamnus cathartica</i> .
Washington hawthorn.....	<i>Crataegus cordata</i> .	Japanese buckthorn.....	<i>Rhamnus crenata</i> .
Hawthorn.....	<i>Crataegus corporea</i> .	Dahurian buckthorn.....	<i>Rhamnus dahurica</i> .
Cockspur thorn.....	<i>Crataegus crus-galli</i> .	Japanese creeper.....	<i>Ampelopsis tricuspidata</i> .
Dawson hawthorn.....	<i>Crataegus dawsoniana</i> .	Russian-olive.....	<i>Elaeagnus angustifolia</i> .
Hawthorn.....	<i>Crataegus densiflora</i> .	Spiny aralia.....	<i>Acanthopanax divaricata</i> .
Do.....	<i>Crataegus ferenaria</i> .	Do.....	<i>Acanthopanax henryi</i> .
Do.....	<i>Crataegus fiabellata</i> .	Do.....	<i>Acanthopanax sessiliflorum</i> .
Do.....	<i>Crataegus gemmosa</i> .	Colorado dogwood.....	<i>Cornus coloradensis</i> .
Illinois hawthorn.....	<i>Crataegus illinoensis</i> .	Red-osier dogwood.....	<i>Cornus stolonifera</i> .
Hawthorn.....	<i>Crataegus irrasa</i> .	Common persimmon.....	<i>Diospyros virginiana</i> .
Do.....	<i>Crataegus macrantha</i> .	Privet.....	<i>Ligustrum acuminatum</i> .
Do.....	<i>Crataegus monogyna</i> .	Do.....	<i>Ligustrum amurense</i> .
Do.....	<i>Crataegus neapolitana</i> .	Do.....	<i>Ligustrum ciliatum</i> .
Do.....	<i>Crataegus nitida</i> .	Do.....	<i>Ligustrum microcarpum</i> .
Do.....	<i>Crataegus oxyacantha</i> .	Do.....	<i>Ligustrum vulgare</i> .
Do.....	<i>Crataegus oxyacanthoides</i> .	Matrimony-vine.....	<i>Lycium chinense</i> .
Do.....	<i>Crataegus persistens</i> .	Do.....	<i>Lycium rhombifolium</i> .
Do.....	<i>Crataegus pinnatifida</i> .	Arrowwood.....	<i>Viburnum acerifolium</i> .
Do.....	<i>Crataegus pruinosa</i> .	American cranberry-bush.....	<i>Viburnum americanum</i> .
Do.....	<i>Crataegus rotundifolia</i> .	Withe-rod.....	<i>Viburnum cassioides</i> .
Do.....	<i>Crataegus rupicola</i> .	Linden viburnum.....	<i>Viburnum dilatatum</i> .
Do.....	<i>Crataegus tomentosa</i> .	Beech viburnum.....	<i>Viburnum erosum</i> .
Do.....	<i>Crataegus viridis</i> .	Nannyberry.....	<i>Viburnum lentago</i> .
Laurel hawthorn.....	<i>Photinia villosa</i> .	European cranberry-bush.....	<i>Viburnum opulus</i> .
Arnold crab apple.....	<i>Malus arnoldiana</i> .	Blackhaw.....	<i>Viburnum prunifolium</i> .
Siberian crab apple.....	<i>Malus baccata and var. oblonga</i> .	Southern blackhaw.....	<i>Viburnum rufidulum</i> .
Wild sweet crab apple.....	<i>Malus dawsoniana</i> .	Sargent's cranberry-bush.....	<i>Viburnum sargentii</i> .
Japanese flowering crab apple.....	<i>Malus floribunda</i> .	Snowberry.....	<i>Symphoricarpos occidentalis</i> .
Hall crab apple.....	<i>Malus halliana</i> .	Do.....	<i>Symphoricarpos orbiculatus</i> .
Kaido crab apple.....	<i>Malus kaido</i> .	Do.....	<i>Symphoricarpos racemosus</i> .
Pearleaf crab apple.....	<i>Malus prunifolia (rubra cerasiforme)</i> .	Do.....	<i>Symphoricarpos laevigata</i> .
Sargent crab apple.....	<i>Malus sargentii</i> .	Belle honeysuckle.....	<i>Lonicera bella</i> .
Scheidecker crab apple.....	<i>Malus scheideckeri</i> .	Sweetberry honeysuckle.....	<i>Lonicera caerulea</i> .
Toringo crab apple.....	<i>Malus sieboldi</i> .	Limber honeysuckle.....	<i>Lonicera dioica</i> .
Chinese flowering crab apple.....	<i>Malus spectabilis</i> .	Amur honeysuckle.....	<i>Lonicera maackii</i> .
American mountain-ash.....	<i>Sorbus americana</i> .	Grape honeysuckle.....	<i>Lonicera prolifera</i> .
Japan mountain-ash.....	<i>Sorbus matsumurana</i> .	Tartarian honeysuckle.....	<i>Lonicera tatarica</i> .
Birchleaf pear.....	<i>Pyrus betulafolia</i> .		
Service berry.....	<i>Amelanchier canadensis</i> .		
Do.....	<i>Amelanchier oblongifolia</i> .		
Do.....	<i>Amelanchier spicata</i> .		
Black chokeberry.....	<i>Aronia melanocarpa</i> .		
Rose.....	<i>Rosa alberti</i> .		

TABLE 2.—*Persistent fruits in the New York Botanical Garden, March 7, 1914*

Common name	Scientific name	Common name	Scientific name
Amur barberry.....	<i>Berberis amurense.</i>	Rose.....	<i>Rosa multiflora.</i>
Siebold's barberry.....	<i>Berberis sieboldii.</i>	Do.....	<i>Rosa nitida.</i>
Japanese barberry.....	<i>Berberis thunbergi.</i>	Do.....	<i>Rosa nutkana.</i>
European barberry.....	<i>Berberis vulgaris.</i>	Do.....	<i>Rosa petersiana.</i>
Firethorn.....	<i>Cotoneaster rotundifolia.</i>	Do.....	<i>Rosa rubiginosa.</i>
Do.....	<i>Cotoneaster simonsi.</i>	Do.....	<i>Rosa rugosa.</i>
Do.....	<i>Cotoneaster vacillans.</i>	Do.....	<i>Rosa solanderi.</i>
Hall crab apple.....	<i>Malus halliana.</i>	Do.....	<i>Rosa spinosissima.</i>
Hawthorn.....	<i>Crataegus collina.</i>	Do.....	<i>Rosa stylosa.</i>
Washington hawthorn.....	<i>Crataegus cordata.</i>	Do.....	<i>Rosa villosa.</i>
Hawthorn.....	<i>Crataegus pentandra.</i>	Dwarf sumac.....	<i>Rhus copallina.</i>
Chinese hawthorn.....	<i>Crataegus pinnatifida.</i>	Staghorn sumac.....	<i>Rhus hirta.</i>
Hawthorn.....	<i>Crataegus rhombifolia.</i>	Finetooth holly.....	<i>Ilex serrata.</i>
Do.....	<i>Crataegus scabrida.</i>	Common winterberry.....	<i>Ilex verticillata.</i>
Cockspur thorn.....	<i>Crataegus crusgalli.</i>	Privet.....	<i>Ligustrum ciliatum.</i>
Service berry.....	<i>Amelanchier asiatica.</i>	Ibota privet.....	<i>Ligustrum ibota.</i>
Red chokeberry.....	<i>Aronia arbutifolia.</i>	California privet.....	<i>Ligustrum ovalifolium.</i>
Purple chokeberry.....	<i>Aronia atropurpurea.</i>	European privet.....	<i>Ligustrum vulgare.</i>
Black chokeberry.....	<i>Aronia melanocarpa.</i>	Japanese beautyberry.....	<i>Callicarpa japonica.</i>
Beach plum.....	<i>Prunus maritima.</i>	Chinese beautyberry.....	<i>Callicarpa purpurea.</i>
Rose.....	<i>Rosa acicularis.</i>	Common matrimony-vine.....	<i>Lycium halimifolium.</i>
Do.....	<i>Rosa canina.</i>	Arrowwood.....	<i>Viburnum acerifolium.</i>
Do.....	<i>Rosa copelandi.</i>	Viburnum.....	<i>Viburnum cotinifolium.</i>
Do.....	<i>Rosa hispida.</i>	Linden viburnum.....	<i>Viburnum dilatatum.</i>
Do.....	<i>Rosa humilis.</i>	Wayfaring-tree.....	<i>Viburnum lantana.</i>
Do.....	<i>Rosa jundzillii.</i>	Smooth withe-rod.....	<i>Viburnum nudum.</i>
Do.....	<i>Rosa lucida.</i>	European cranberrybush.....	<i>Viburnum opulus.</i>
Do.....	<i>Rosa lyoni.</i>	Japanese honeysuckle.....	<i>Lonicera japonica.</i>
Do.....	<i>Rosa micrantha.</i>		

Table 3 shows the relative popularity with birds of important genera of fleshy fruits.

TABLE 3.—*Fleshy fruits attractive to desirable birds*<sup>1</sup>

Common name	Scientific name	Number of species of birds known to eat the fruit <sup>2</sup>	Desirable kinds of birds most fond of the fruit <sup>3</sup>
Juniper; red cedar.....	Juniperus.....	39	Yellow-shafted flicker, evening grosbeak, pine grosbeak, purple finch, cedar waxwing, myrtle warbler, mocking bird, robin, eastern bluebird.
Greenbrier.....	Smilax.....	39	Cardinal, mocking bird, brown thrasher, catbird, hermit thrush, robin.
Bayberry.....	Myrica.....	73	Bobwhite, downy woodpecker, yellow-shafted flicker, eastern phoebe, meadow lark, chewink, tree swallow, white-eyed vireo, myrtle warbler, brown thrasher, catbird, Carolina wren, black-capped chickadee, hermit thrush, eastern bluebird.
Hackberry.....	Celtis.....	40	Yellow-bellied sapsucker, yellow-shafted flicker, cardinal, cedar waxwing, mocking bird, brown thrasher, robin, eastern bluebird.
Mulberry.....	Morus.....	52	Yellow-billed cuckoo, red-headed woodpecker, red-bellied woodpecker, downy woodpecker, kingbird, Baltimore oriole, orchard oriole, cardinal, purple finch, scarlet tanager, cedar waxwing, red-eyed vireo, yellow warbler, mocking bird, catbird, wood thrush, robin.
Pokeberry.....	Phytolacca.....	49	Mourning dove, yellow-shafted flicker, kingbird, cardinal, mocking bird, catbird, hermit thrush, gray-cheeked thrush, olive-backed thrush, robin, eastern bluebird.
Spicebush.....	Benzoin.....	17	Kingbird, red-eyed vireo, wood thrush, veery.
Sassafras.....	Sassafras.....	18	Bobwhite, kingbird, red-eyed vireo, catbird, veery, robin.
Strawberry.....	Fragaria.....	46	Chewink, catbird, brown thrasher, wood thrush, robin.
Raspberry; blackberry.....	Rubus.....	118	Ruffed grouse, bobwhite, red-headed woodpecker, yellow-shafted flicker, kingbird, Baltimore oriole, orchard oriole, pine grosbeak, song sparrow, fox sparrow, white-throated sparrow, chewink, California towhee, spurred towhee, cardinal, rose-breasted grosbeak, black-headed grosbeak, cedar waxwing, red-eyed vireo, mocking bird, catbird, brown thrasher, tufted titmouse, wren-tit, olive-backed thrush, wood thrush, robin, eastern bluebird.
Rose.....	Rosa.....	25	Ruffed grouse, sharp-tailed grouse, prairie chicken, bobwhite.
Mountain-ash.....	Sorbus.....	14	Red-headed woodpecker, Baltimore oriole, evening grosbeak, pine grosbeak, cedar waxwing, Bohemian waxwing, catbird, brown thrasher, robin.
Chokeberry.....	Aronia.....	13	Meadow lark, brown thrasher.
Red haw.....	Crataegus.....	33	Ruffed grouse, pine grosbeak, purple finch, robin.
Dwarf apples.....	Malus.....	(4)	Ruffed grouse, ringneck pheasant, red crossbill, pine grosbeak, purple finch, cedar waxwing, mocking bird, robin.
June berry.....	Amelanchier.....	40	Yellow-shafted flicker, Baltimore oriole, cedar waxwing, catbird, hermit thrush, veery, robin.
Wild cherry.....	Prunus.....	74	Ruffed grouse, bobwhite, mourning dove, red-headed woodpecker, yellow-shafted flicker, kingbird, Bullock oriole, Baltimore oriole, orchard oriole, evening grosbeak, purple finch, rose-breasted grosbeak, black-headed grosbeak, Louisiana tanager, red-eyed vireo, cedar waxwing, mocking bird, catbird, brown thrasher, olive-backed thrush, wood thrush, robin, eastern bluebird.

<sup>1</sup> Barberries (*Berberis*), buckthorn (*Rhamnus*), and currants (*Ribes*) are omitted because they serve as alternate hosts of rusts attacking wheat, oats, and white pine, respectively.

<sup>2</sup> When 10 or more.

<sup>3</sup> Included on the basis of field observation or because fruit was found in 10 or more stomachs.

<sup>4</sup> Thirty-eight kinds of birds are known to feed on apples of various sorts, but it is not known just how many seek the small-fruited ornamental flowering apples, which are the best to plant for birds.

TABLE 3.—*Fleshy fruits attractive to desirable birds*—Continued

Common name	Scientific name	Number of species of birds known to eat the fruit	Desirable kinds of birds most fond of the fruit
Sumac <sup>1</sup> -----	Rhus-----	93	Ruffed grouse, bobwhite, valley quail, downy woodpecker, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, phoebe, goldfinch, golden-crowned sparrow, chewink, white-eyed vireo, Audubon warbler, mocking bird, catbird, California thrasher, brown thrasher, [Carolina wren, black-capped chickadee, Carolina chickadee, wren-tit, hermit thrush, robin, eastern bluebird.
Pepper berry-----	Schinus-----	11	Cedar waxwing, phainopepla, hermit thrush, varied thrush, robin.
Holly-----	Ilex-----	45	Ruffed grouse, bobwhite, valley quail, yellow-bellied sapsucker, yellow-shafted flicker, cedar waxwing, mocking bird, catbird, brown thrasher, hermit thrush, robin, eastern bluebird.
Supple-jack-----	Berchemia-----	13	Mocking bird, robin.
Buckthorn-----	Rhamnus-----	16	Mocking bird, catbird, brown thrasher, robin.
Wild grape-----	Vitis-----	77	Ruffed grouse, bobwhite, pileated woodpecker, red-bellied woodpecker, red-shafted flicker, yellow-shafted flicker, kingbird, cardinal, cedar waxwing, mocking bird, catbird, brown thrasher, wood thrush, veery, robin, western bluebird, eastern bluebird.
Virginia creeper-----	Parthenocissus--	39	Red-headed woodpecker, red-bellied woodpecker, yellow-bellied sapsucker, yellow-shafted flicker, evening grosbeak, purple finch, scarlet tanager, red-eyed vireo, mocking bird, brown thrasher, tufted titmouse, hermit thrush, olive-backed thrush, gray-cheeked thrush, robin, eastern bluebird.
Buffalo berry-----	Shepherdia-----	16	Sharp-tailed grouse, pine grosbeak.
Silverberry, Russian olive, etc.	Elaeagnus-----	(*)	Sharp-tailed grouse, prairie chicken, cedar waxwing, catbird, robin.
Wild sarsaparilla-----	Aralia-----	14	Bobwhite, robin.
Dogwood-----	Cornus-----	86	Ruffed grouse, bobwhite, downy woodpecker, yellow-shafted flicker, red-shafted flicker, kingbird, evening grosbeak, pine grosbeak, purple finch, white-throated sparrow, song sparrow, cardinal, cedar waxwing, warbling vireo, red-eyed vireo, catbird, brown thrasher, hermit thrush, olive-backed thrush, gray-cheeked thrush, wood thrush, robin, eastern bluebird.
Sour gum-----	Nyssa-----	36	Yellow-shafted flicker, purple finch, cedar waxwing, gray-cheeked thrush, olive-backed thrush, robin.
Crowberry-----	Empetrum-----	18	Pine grosbeak, snowflake.
Bearberry-----	Arctostaphylos--	16	Ruffed grouse, dusky grouse, valley quail, mountain quail, fox sparrow, wren tit.
Huckleberry-----	Gaylussacia-----	35	Pine grosbeak, chewink, robin.
Blueberry-----	Vaccinium-----	67	Ruffed grouse, valley quail, kingbird, orchard oriole, pine grosbeak, chewink, cedar waxwing, catbird, brown thrasher, black-capped chickadee, tufted titmouse, hermit thrush, robin, eastern bluebird.
Beautyberry-----	Callicarpa-----	10	Mocking bird, brown thrasher.
Partridge berry-----	Mitchella-----	10	Ruffed grouse.
Elderberry-----	Sambucus-----	106	Valley quail, red-headed woodpecker, yellow-shafted flicker, eastern kingbird, Arkansas kingbird, black phoebe, California towhee, white-crowned sparrow, rose-breasted grosbeak, black-headed gros beak, phainopepla, red-eyed vireo, mocking bird, catbird, brown thrasher, California thrasher, wren-tit, olive-backed thrush, robin, western bluebird, eastern bluebird.
Snowberry-----	Symphoricarpos--	25	Sharp-tailed grouse, evening grosbeak, pine grosbeak, varied thrush.
Black haw-----	Viburnum-----	28	Ruffed grouse, yellow-billed cuckoo, yellow-shafted flicker, purple finch, rose-breasted grosbeak, cedar waxwing, catbird, brown thrasher, robin, eastern bluebird.
Honeysuckle-----	Lonicera-----	15	Bobwhite, pine grosbeak, white-throated sparrow, catbird, mocking bird, brown thrasher, hermit thrush, robin.

<sup>1</sup> Only nonpoisonous species of sumac are considered.<sup>2</sup> Data given are based entirely on field observations; total number of birds eating the various species of *Elaeagnus* unknown.

The species listed in Table 4 are selected from a much larger number which are known to be favorites with fruit-eating birds. Various considerations have influenced choice, as ornamental value, earliness,

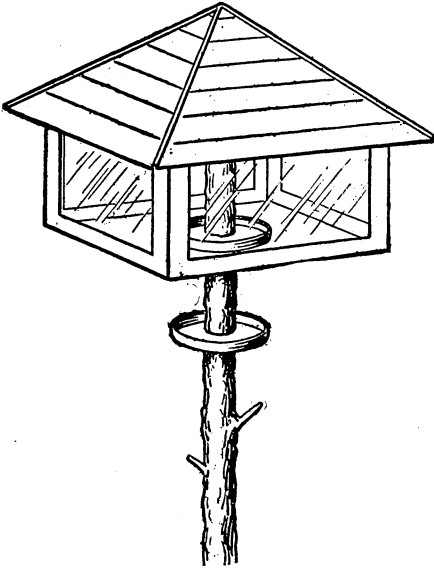


FIGURE 10.—Food house

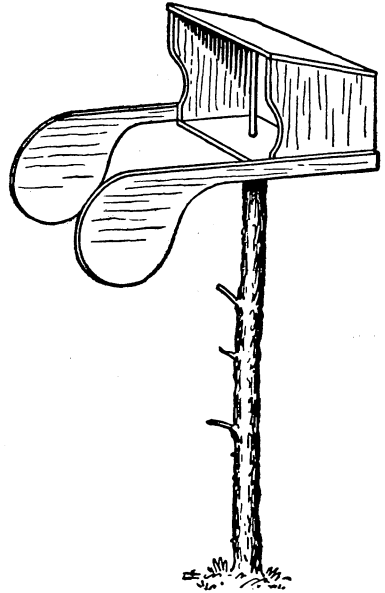


FIGURE 11.—Food house on pivot

lateness, or length of fruiting season, and especially availability of the plants through ordinary channels of trade. The data on fruiting seasons have been compiled from the principal herbaria of the Northeastern States, with a few additions from other sources.

TABLE 4.—Seasons of fruits attractive to birds

Common name	Scientific name	Native or introduced	Fruiting season											
			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Juniper.....	<i>Juniperus communis</i>	Native.....												
Red cedar.....	<i>Juniperus virginiana</i>	do.....												
Greenbrier.....	<i>Smilax rotundifolia</i>	do.....												
Bayberry.....	<i>Myrica carolinensis</i>	do.....												
Hackberry.....	<i>Celtis occidentalis</i>	do.....												
Red mulberry.....	<i>Morus rubra</i>	do.....												
White mulberry.....	<i>Morus alba</i>	Introduced.....												
Pokeweed.....	<i>Phytolacca decandra</i>	Native.....												
Japanese barberry.....	<i>Berberis thunbergi</i>	Introduced.....												
Sassafras.....	<i>Sassafras variifolium</i>	Native.....												
Spicebush.....	<i>Benzoin aestivale</i>	do.....												
Flowering crab apple.....	<i>Malus floribunda</i>	Introduced.....												
Chokeberry.....	<i>Pyrus melanocarpa</i>	Native.....												
Mountain-ash.....	<i>Pyrus americana</i>	do.....												
June berry.....	<i>Amelanchier canadensis</i>	do.....												
Asiatic service-tree <sup>1</sup> .....	<i>Amelanchier asiatica</i>	Introduced.....												
Cockspur thorn.....	<i>Crataegus crus-galli</i>	Native.....												
Washington hawthorn.....	<i>Crataegus phaenopyrum</i>	Introduced.....												
English hawthorn.....	<i>Crataegus oxyacantha</i>	do.....												
Wild strawberry.....	<i>Fragaria americana</i>	Native.....												
Wild blackberry.....	<i>Rubus allegheniensis</i>	do.....												
Wild blackberry.....	<i>Rubus triflorus</i>	do.....												
Wild blackberry.....	<i>Rubus canadensis</i>	do.....												
Pasture rose <sup>1</sup> .....	<i>Rosa humilis</i>	do.....												
Wild black cherry.....	<i>Prunus serotina</i>	do.....												
Wild red cherry.....	<i>Prunus pennsylvanica</i>	do.....												
Beach plum <sup>2</sup> .....	<i>Prunus maritima</i>	do.....												

<sup>1</sup> Apparently procurable only from foreign dealers.<sup>2</sup> Fruit becoming dry at end of season.







The fruiting seasons indicated include the earliest and latest dates recorded for the Northeastern States. Hence it can not be expected that fruit will be available in any one locality throughout the entire bearing season of a plant unless a large number of plants are set out and in a variety of situations. Purchasers may obtain information from nurseries as to where, when, and how to plant.<sup>5</sup> Notes on species which may be substituted for some of those in the main list, and other comments, follow the table.

#### PROTECTING CULTIVATED FRUITS

Birds devour cultivated fruit principally because the processes of cultivation diminish the wild supply. The presence of wild fruit in a locality always serves to protect domestic varieties, especially when the wild trees or shrubs are of the same kind as the cultivated ones and ripen earlier.

Table 5 (p. 17) shows in a graphic way the species which may be used to protect the principal classes of cultivated fruits.

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<sup>5</sup> They may consult to advantage also Farmers' Bulletin 1567, Propagation of Trees and Shrubs.

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TABLE 5.—Seasons of fruits useful to protect cultivated varieties

Common name	Scientific name	Native or introduced	To protect—	Fruiting season							
				May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Wild strawberry	<i>Fragaria americana</i>	Native	Strawberries	■	■	■	■	■			
Baked-apple berry	<i>Rubus chamaemorus</i>	do.	Raspberries and blackberries		■	■	■	■			
Wild blackberry	<i>Rubus canadensis</i>	do.	do.		■	■	■	■			
Wild blackberry	<i>Rubus allegheniensis</i>	do.	do.		■	■	■	■			
Wild blackberry	<i>Rubus triflorus</i>	do.	do.		■	■	■	■			
Wild blackberry	<i>Rubus frondosus</i>	do.	do.		■	■	■	■			
Wild pepper	<i>Daphne mezereum</i>	Introduced	do.	■	■	■	■	■			
Red mulberry	<i>Morus rubra</i>	Native	Cherries		■	■	■	■			
White mulberry	<i>Morus alba</i>	Introduced	do.		■	■	■	■			
June berry	<i>Amelanchier canadensis</i>	Native	do.		■	■	■	■	■		
Wild red cherry	<i>Prunus pennsylvanica</i>	do.	do.		■	■	■	■	■		
Japanese cherry	<i>Prunus japonica pendula</i>	Introduced	do.		■	■	■	■	■		
Sargent cherry <sup>1</sup>	<i>Prunus sargentii</i>	do.	do.		■	■	■	■	■		
Mahaleb cherry	<i>Prunus mahaleb</i>	do.	do.		■	■	■	■	■		
Fly honeysuckle	<i>Lonicera canadensis</i>	Native	do.		■	■	■	■	■		
Sweetberry honeysuckle	<i>Lonicera caerulea</i>	do.	do.		■	■	■	■	■		
Red berried elder	<i>Sambucus racemosa</i>	do.	do.		■	■	■	■	■		
Asiatic service-tree <sup>1</sup>	<i>Amelanchier asiatica</i>	Introduced	Apples and pears					■	■	■	■
Silky-leaved pear <sup>1</sup>	<i>Pyrus elaeagnifolium</i>	do.	do.					■	■	■	■
Flowering crab apple	<i>Malus floribunda</i>	do.	do.					■	■	■	■
Dwarf crab apple	<i>Malus toringo</i>	do.	do.					■	■	■	■
Hybrid crab apple <sup>1</sup>	<i>Malus prunifolia</i>	do.	do.					■	■	■	■
Cockspur thorn	<i>Crataegus crus-galli</i>	Native	do.					■	■	■	■
English hawthorn	<i>Crataegus oxyacantha</i>	Introduced	do.					■	■	■	■
One-seeded hawthorn	<i>Crataegus monogyna</i>	do.	do.					■	■	■	■

<sup>1</sup> Apparently procurable only from foreign dealers.

## PLANTS FOR THE SHORE

Where the coast is rocky and the soil of ordinary character, conditions are little different from those inland, and except in relation to exposure there need be no especial preference given in the choice of plants. It is worth mentioning, however, that several trees and shrubs are better adapted to withstand the winds so prevalent on the coast. These include three species of juniper (*Juniperus communis*, *J. horizontalis*, and *J. virginiana*), common barberry, English hawthorn, hybrid crab apple, European and American mountain-ashes, smooth and staghorn sumacs, privet, and red-berried elder. Where the soil is chiefly sand, and that often shifting, conditions are not suited to many plants. Selection may be made, however, from the following, all of which are known to thrive in such surroundings.

**For seed eaters.**—Beach grass (*Ammophila arenaria* and *Calamovilfa longifolia*), *Polygonum sachalinense*, and sunflower.

**For fruit eaters.**—Bayberry (*Myrica cerifera*), sea buckthorn (*Hippophaë rhamnoides*), sand cherry (*Prunus pumila* or *P. cuneata*), beach plum (*Prunus maritima*), cranberries, and bearberry (*Arctostaphylos uva-ursi*).